

REMARKS

Summary of the Amendment

Upon entry of the above amendment, the specification and claims 1, 8, 12, 13, 15 - 18, and 22 - 38 will have been amended and new claim 40 will have been submitted for consideration by the Examiner. Accordingly, claims 1 - 40 are currently pending.

Summary of the Official Action

In the instant Office Action, the Examiner has rejected claims 2, 8, 12, 13, and 15 - 39 based upon formal matters and has rejected claims 1 - 39 over the art of record. By the present amendment and remarks, Applicants submit that the rejections have been overcome, and respectfully request reconsideration of the outstanding Office Action and allowance of the present application.

Objection to Specification is Moot

By the present amendment, paragraph [0064] has been amended to discussed reference numerals 431 and 432 depicted in Figure 6. Accordingly, Applicants submit that the objection to the specification is moot, and request that the Examiner acknowledge the same in the next official communication to Applicants.

Traversal of Rejection Under 35 U.S.C. § 112, Second Paragraph

By the present amendment, claims 8, 12, 13, and 15 - 39 have been amended to address and overcome the Examiner's formal rejections. However, Applicants note that, while the term "about" has been deleted from the claims to address a formal matter regarding

clarity, this amendment should not be construed as disclaiming angles which would fall within engineering accuracy tolerances of the precisely recited angles. In other words, Applicants note that the term “about” was deleted in response to a formal matter, such that this amendment was not made to address prior art nor is the instant amendment intended to narrow the scope of the claims with regard to range of recited values.

Moreover, Applicants traverse the Examiner’s asserts that claim 2 is indefinite. Applicants submit that the recitation of “essentially cylindrical” clearly relates to a shape which is close to cylindrical, but not perfectly cylindrical, and that such a recitation would be readily understood by those ordinarily skilled in the art. Further, Applicants note that, as Figures 1, 2, 7, and 8 clearly illustrate a working part 3 that is not perfectly cylindrical, those ordinarily skilled in the art reviewing the disclosure and drawings would be able to readily ascertain the scope of the invention from the claims, including claim 2.

Applicants further traverse the Examiner’s rejection of claims as including ranges within ranges. Applicants submit that the claims objected to by the Examiner are dependent claims that further define the range recited in a preceding claim. Thus, Applicants submit that these claims are not indefinite, and that those ordinarily skilled the in art would readily understand that the dependent claims are further defining the range recited in the preceding claim and not defining a new range in conflict with the range recited in the preceding claim. Still further, Applicants note that the pending claims do not recite “such as,” which is the

prohibition in the stated case law, because it cannot be determined whether the claim recites the broad range or the “such as” example. In the instant application, the narrower range further defines the broad range, such that the claims clearly and unambiguously further define the invention in compliance with 35 U.S.C. § 112, second paragraph.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claims 2, 8, 12, 13, and 15 - 39 under 35 U.S.C. § 112, second paragraph, and indicate that these claims are fully in compliance with the requirements of the statute.

Traversal of Rejection Under 35 U.S.C. § 102(b)

Applicants traverse the rejection of claims 18 - 33 and 39 under 35 U.S.C. § 102(b) as being anticipated by HALE (U.S. Patent No. 4,776,732). The Examiner asserts that HALE shows an indexable tip having a flat supporting area 215 and a face 114 opposite the supporting area, in which the supporting area and face are arranged to form open space 217, and six circumferential cutting edges 116 forming alternating acute 112 and obtuse 113 corners. Applicants traverse the Examiner’s assertions.

Applicants’ independent claim 18, as now amended, recites, *inter alia*, six circumferential cutting edges arranged to form acute and obtuse angled corners, in which a vertical distance *from said supporting area to said cutting edges located in a region of said obtuse-angled corners is less than a vertical distance from said supporting area to said cutting edges located in a region of said acute-angled corners*. Applicants submit that

HALE fails to anticipate at least the above-noted features.

Applicants note that, while disclosing a drill with disposable inserts, HALE fails to disclose the indexable tip recited in at least independent claim 18. In particular, Applicants note that HALE fails to disclose that the hexagonal indexable insert arranges the obtuse-angled corners at different vertical heights, relative to a support surface, from the acute-angled corners, and certainly fails to disclose that the vertical height of the obtuse-angled corner region is less than the vertical height of the acute-angled corner region relative to the support surface, as recited in at least independent claim 18.

Moreover, while HALE discloses that land 119 and cutting edge 116 may be below the surface of hexagonal side face 114, there is no disclosure related to vertical distance differences between an acute-angled corner region and an obtuse-angled corner region.

Because HALE fails to disclose at least the above-noted feature, Applicants submit that HALE fails to disclose each and every recited feature of the instant invention. Accordingly, Applicant submits that HALE fails to establish an adequate evidentiary basis to support a rejection of anticipation under 35 U.S.C. § 102(b) and, therefore, that the instant rejection should be withdrawn.

Further, Applicants submit that claims 19 - 33 and 39 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicants submit

that HALE fails to anticipate, *inter alia*, said cutting tool is structured for the machining of metals and alloys, as recited in claim 19; an attachment device formed as a center hole, as recited in claim 20; said cutting edges are arranged to form alternately acute-angled corners and obtuse-angled corners, as recited in claim 21; said cutting edges form acute angled corners having an angle of $88^{\circ} \pm 1.7^{\circ}$, as recited in claim 22; said acute angled corners are $88^{\circ} \pm 0.5^{\circ}$, as recited in claim 23; said acute angled corners are $88^{\circ} \pm 0.3^{\circ}$, as recited in claim 24; said cutting edges are oriented at an angle of between 2° and 10° to said supporting area, as recited in claim 25; said cutting edges are oriented at an angle between 4° and 8° to said supporting area, as recited in claim 26; said cutting edges are oriented at an angle of $7^{\circ} \pm 0.5^{\circ}$ to said supporting area, as recited in claim 27; a part of said face immediately bordering said cutting edge forms an angle of between 2° and 18° with said supporting area, as recited in claim 28; a part of said face immediately bordering said cutting edge forms an angle of between 4° and 12° with said supporting area, as recited in claim 29; a part of said face immediately bordering said cutting edge forms an angle of between 5° and 10° with said supporting area, as recited in claim 30; the open spaces form an angle of between 5° and 12° with a straight line normal to said supporting area at said cutting edges, as recited in claim 31; the open spaces form an angle of between 6° and 11° with a straight line normal to said supporting area at said cutting edges, as recited in claim 32; the open spaces form an angle of $7^{\circ} \pm 0.5^{\circ}$ with a straight line normal to said supporting area at said

cutting edges, as recited in claim 33; and said corners are rounded off, as recited in claim 39.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claims 18 - 33 and 39 under 35 U.S.C. § 102(b) and indicate that these claims are allowable.

Traversal of Rejection Under 35 U.S.C. § 103(a)

1. Over Shaffer in view of Hale

Applicants traverse the rejection of claims 1 - 13 and 15 - 17 under 35 U.S.C. § 103(a) as being unpatentable over SHAFFER (U.S. Patent No. 6,464,433) in view of HALE. The Examiner asserts that SHAFFER shows a cutting tool having a base body 24 and an indexable tip 28 having at least one circumferential cutting edge. While acknowledging that SHAFFER fails to disclose the specifics of the indexable tip, the Examiner asserts that it would have been obvious to utilize the indexable tip of HALE. Applicants traverse the Examiner's assertions.

Applicants' independent claim 1, as now amended, recites, *inter alia*, a thickness of said indexable tip *from said support surface to said acute corner angles is greater than a thickness of said indexable tip from said support surface to said obtuse corner angles*. Moreover, Applicants submit that no proper combination of SHAFFER and HALE teaches or suggests at least the above-noted feature of the instant invention.

Applicants initially note that, as acknowledged by the Examiner, SHAFFER fails to

teach or suggest any specifics of the cutting tool used in combination with the elongated support element. As such, Applicants submit that SHAFFER fails to provide any teaching or suggestion of an indexable tip having a thickness from support surface to acute-angled corner that is greater than a thickness from support surface to obtuse-angled corner, as recited in at least independent claim 1.

To address the deficiency of SHAFFER, the Examiner has applied HALE, which discloses the hexagonal indexable tool discussed above. However, Applicants again note that HALE fails to provide any teaching or suggestion that the acute-angled corners of the tool have different thicknesses than at the obtuse-angled corners of the tool.

Because neither applied document teaches or suggests at least the above-noted features, Applicants submit that no proper combination of SHAFFER and HALE can render unpatentable the combination of features recited in at least independent claim 1. Therefore, Applicants submit that the instant rejection is improper and should be withdrawn.

Further, Applicants submit that claims 2 - 13 and 15 - 17 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicants submit that no proper combination SHAFFER in view of HALE teaches or suggests, *inter alia*, said working part is essentially cylindrical, as recited in claim 2; said indexable tip is positioned at an end of said working part remote from said clamping part, as recited in claim 3; said

working part comprises a flute running in a direction of a tool axis and a form-locking seat for said indexable tip, as recited in claim 4; when said indexable tip is seated on said working part, at least one cutting edge slightly projects from said working part, as recited in claim 5; said flute running in a direction of said tool axis is formed with a twist, as recited in claim 6; said hexagonal shape of said indexable tip comprises alternately obtuse and acute corner angles and six straight cutting edges, as recited in claim 7; a greatest width of said indexable tip is at least 0.92 times a diameter of said working part, as recited in claim 8; said at least one cutting edge comprises three cutting edges, and a trajectory of at least a part of one of said three cutting edges projects slightly beyond an outer contour of said working part, as recited in claim 9; said base body comprises at least one bore for inserting at least one of coolant and lubricant, and an exit of said at least one bore is directed at said indexable tip, as recited in claim 10; said exit of said at least one bore is obliquely arranged relative to a tool axis, as recited in claim 11; said exit of said at least one bore is arranged at an angle between 15° and 75° to said tool axis, as recited in claim 12; said exit of said at least one bore is arranged at an angle between 25° and 45° to said tool axis, as recited in claim 13; said at least one cutting edge comprises a plurality of cutting edges arranged to form acute angled corners having an angle of $88^{\circ} \pm 1.7^{\circ}$, as recited in claim 15; said at least one cutting edge comprises a plurality of cutting edges arranged to form acute angled corners having an angle of $88^{\circ} \pm 0.3^{\circ}$, as recited in claim 16; a front cutting edge of said indexable tip forms

an angle of ~~about~~ $89.8^{\circ} \pm 0.5^{\circ}$ with an axis of tool rotation, as recited in claim 17.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claims 1 - 13 and 15 - 17 under 35 U.S.C. § 103(a) and indicate that these claims are allowable.

2. *Over Shaffer in view of Hale and further in view of Arai*

Applicants traverse the rejection of claim 14 under 35 U.S.C. § 103(a) as being unpatentable over SHAFFER in view of HALE and further in view of ARAI et al. (U.S. Patent No. 5,460,464) [hereinafter “ARAI”].

Applicants submit that ARAI fails to teach or suggest the subject matter noted above as deficient in both SHAFFER and HALE. That is, Applicants submit that ARAI likewise fails to teach or suggest an indexable tip having a thickness from support surface to acute corner angles that is greater than a thickness from support surface to obtuse corner angles, as recited in claim at least independent claim 1.

Because none of the applied documents teach or suggest at least the above-noted features of the invention, Applicants submit that no proper combination of these documents can render the instant invention obvious under 35 U.S.C. § 103(a). Accordingly, Applicants request that the Examiner reconsider and withdraw the instant rejection.

Moreover, Applicants note that, in contrast to SHAFFER, ARAI is directed to a milling insert, not a drilling insert. Thus, as these two inserts are intended for wholly distinct

purposes, Applicants submit that the art of record fails to provide the requisite motivation or rationale for combining these dissimilar elements in the manner asserted by the Examiner, such that the asserted combination of documents is improper and should be withdrawn.

Further, Applicants submit that claim 14 is allowable at least for the reason that it depends from an allowable base claim and because it recites additional features that further define the present invention. In particular, Applicants submit that no proper combination of SHAFFER in view of HALE and ARAI teaches or suggests, *inter alia*, said indexable tip comprises a center hole and the center hole of said indexable tip is eccentrically positioned outside a center of said working part, as recited in claim 14.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claim 14 under 35 U.S.C. § 103(a) and indicate that this claim is allowable.

3. Over Hale in view of Enderle

Applicants traverse the rejection of claims 34 - 38 under 35 U.S.C. § 103(a) as being unpatentable over HALE in view of ENDERLE (U.S. Patent No. 5,876,154).

Applicants submit that ENDERLE fails to teach or suggest the subject matter noted above as deficient in HALE. That is, Applicants submit that ENDERLE fails to teach or suggest an indexable tool having a vertical distance from a supporting area to cutting edges located in a region of obtuse-angled corners that is less than a vertical distance from the supporting area to cutting edges located in a region of acute-angled corners, as recited in

claim at least independent claim 18.

Because none of the applied documents teach or suggest at least the above-noted features of the invention, Applicants submit that no proper combination of these documents can render the instant invention obvious under 35 U.S.C. § 103(a). Accordingly, Applicants request that the Examiner reconsider and withdraw the instant rejection.

Further, Applicants submit that claims 34 - 38 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicant submits that no proper combination of HALE and ENDERLE teaches or suggests, *inter alia*, the open spaces are divided into at least two sections comprising a first section, bordering the cutting edges, forming an angle of between 5° and 12° , and a second section, bordering said supporting area, forming an angle of between 12° to 25° with a straight line normal to said supporting area, as recited in claim 34; said first section forms an angle of between 6° and 11° , as recited in claim 35; said first section forms an angle of $7^{\circ} \pm 0.5^{\circ}$, as recited in claim 36; said second section forms an angle of between 14° and 22° , as recited in claim 37; said second section forms an angle of $15^{\circ} \pm 0.5^{\circ}$, as recited in claim 38.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claims 34 - 38 under 35 U.S.C. § 103(a) and indicate that this claim is allowable.

Newly Submitted Claim is Allowable

Applicants submit that newly presented claim 40 is allowable at least for the reasons set forth above. In particular, Applicants note that none of the applied documents of record, whether considered individually or in any proper combination, teaches or suggests, *inter alia*, an indexable tip, releasably connected to said seat, comprising a hexagonal shape, at least one circumferential cutting edge located between adjacent angles of said hexagonal shape, and a support surface, a greatest width across said hexagonal shape is at least 0.92 times a thickness of said working part; and said at least one circumferential cutting edge being arranged obliquely to said support surface.

Accordingly, Applicants request that Examiner consider the merits of new claim 40 and indicate that it is allowable in the next official communication.

Application is Allowable

Thus, Applicants respectfully submit that each and every pending claim of the present invention meets the requirements for patentability under 35 U.S.C. §§ 102 and 103, and respectfully request the Examiner to indicate allowance of each and every pending claim of the present invention.

Authorization to Charge Deposit Account

The Commissioner is authorized to charge to Deposit Account No. 19 - 0089 any necessary fees, including any extensions of time fees required to place the application in condition for allowance by Examiner's Amendment, in order to maintain pendency of this application.

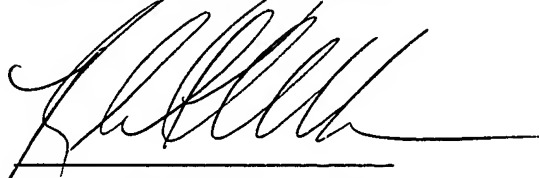
CONCLUSION

In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicants' invention, as recited in each of claims 1 - 40. The claims have been amended to eliminate any arguable basis for rejection under 35 U.S.C. § 112. In addition, the applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Further, any amendments to the claims which have been made in this response and which have not been specifically noted to overcome a rejection based upon the prior art, should be considered to have been made for a purpose unrelated to patentability, and no estoppel should be deemed to attach thereto.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

Respectfully submitted,
Armin SCHLEMMER et al.

A handwritten signature in black ink, appearing to read 'Neil F. Greenblum', written over a horizontal line.

Neil F. Greenblum

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